

WHAT IS CLAIMED IS:

1. An apparatus for measuring feature widths on masks for the semiconductor industry, comprising a carrier plate that is retained in vibrationally decoupled fashion in a base frame; a scanning stage, arranged on the carrier plate, wherein the carrier plate carries the mask to be  
5 measured; an objective arranged opposite a surface of the mask; and a liquid is provided between the objective and the surface of the mask.
2. The apparatus as defined in Claim 1, wherein a precision metering nozzle, which applies the liquid exclusively onto at least one measurement point located on the surface of the mask, is  
10 associated with the objective.
3. The apparatus as defined in Claim 1, wherein the objective has an integral for applying the liquid exclusively onto at least one measurement point defined on the surface of the mask.
- 15 4. The apparatus as defined in Claim 3, wherein the device is embodied as a cylinder that completely surrounds the objective; and the cylinder is separated from the objective by a gap.
5. The apparatus as defined in Claim 4, wherein the liquid is transportable through the gap to the measurement point.
- 20 6. The apparatus as defined in Claim 3, wherein the device encompasses at least one conduit that is arranged coaxially with the circumference of the objective.
7. The apparatus as defined in Claim 6, wherein the liquid is transportable through the one  
25 or more conduits to the measurement point.
8. The apparatus as defined in Claim 1, wherein the liquid completely covers the surface of the mask.
- 30 9. The apparatus as defined in Claim 9, wherein the mask is placed in a special frame; and the mask rests on a special peripheral seal.

10. The apparatus as defined in Claim 1, wherein a front element of the objective is wetted with the liquid.

5 11. The apparatus as defined in Claim 1, wherein the liquid is water.

12. The apparatus as defined in Claim 1, wherein the liquid is an inert oil.

10 13. The apparatus as defined in Claim 1, wherein objective is configured for wavelengths of the illuminating light smaller than 300 nm.

14. The apparatus as defined in Claim 13, wherein objective is configured for wavelengths of the illuminating light smaller than 248 nm.

15 15. An apparatus for measuring feature widths on semiconductor substrates, comprising a carrier plate that is retained in vibrationally decoupled fashion in a base frame; a scanning stage, arranged on the carrier plate, wherein the carrier plate carries the semiconductor substrate to be measured; an objective arranged opposite a surface of the semiconductor substrate, wherein the  
20 wherein objective is configured for wavelengths of the illuminating light smaller than 300 nm; and a liquid is provided between the objective and the surface of the semiconductor substrate.

16. The apparatus as defined in Claim 15, wherein objective is configured for wavelengths of the illuminating light smaller than 248 nm.

25 17. The apparatus as defined in Claim 16, wherein a front element of the objective is wetted with the liquid.

18. The apparatus as defined in Claims 17, wherein the liquid is water.